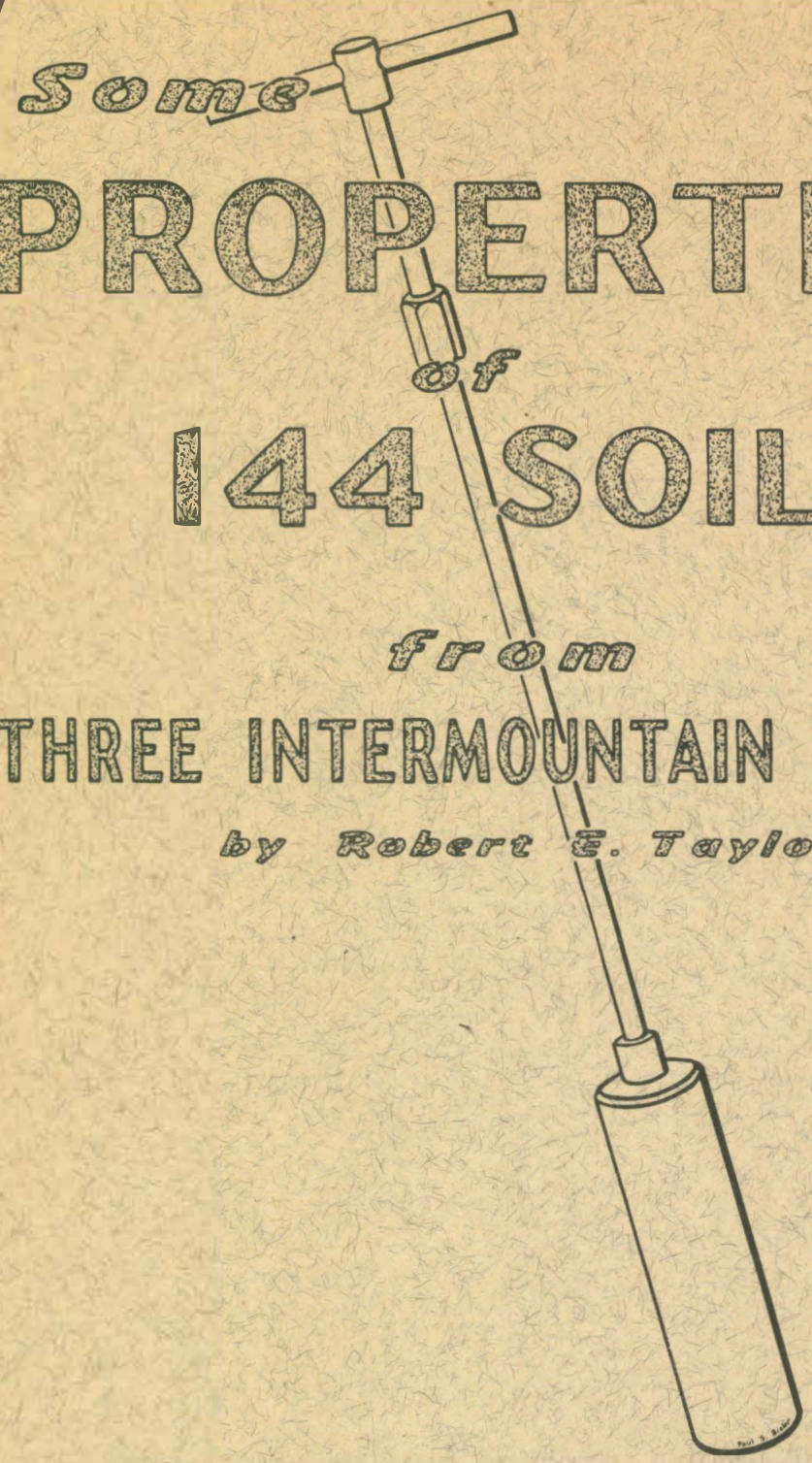
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Some PROPERTIES of 144 SOILS from THREE INTERMOUNTAIN STATES

by Robert E. Taylor



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OGDEN, UTAH

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The soils data herein reported were obtained as an adjunct to the Vicksburg Infiltration Project. The latter is a cooperative program between the Southern Forest Experiment Station, Forest Service, U. S. Department of Agriculture, and the Waterways Experiment Station, Corps of Engineers, U. S. Army, with headquarters at Vicksburg, Mississippi. The Intermountain Forest and Range Experiment Station assisted in carrying out the soils study by providing field station facilities. Field Party Chief Robert E. Taylor was assisted by D. B. Creeze, R. J. Wood, W. L. Fain, and J. C. Holland.

SOME PROPERTIES OF 144 SOILS FROM THREE INTERMOUNTAIN STATES

Robert E. Taylor
Intermountain Forest and Range Experiment Station

From June 1954 to July 1955, the Vicksburg Infiltration Project collected and analyzed soil samples from 144 sites located in southern Idaho, Utah, and the eastern edge of Nevada. This work was done to supply the U. S. Army with information needed for specialized research on military trafficability. The basic data obtained are herein presented because of their interest to soil scientists generally.

Fifty-three soil series are listed alphabetically in table 1. Soils were identified whenever possible from United States Department of Agriculture Soil Survey maps and descriptions. Mr. LeMoyne Wilson, in charge, Utah Soil Survey, gave the author access to available unpublished soil survey data for Utah. Mr. M. A. Fosberg, in charge, Idaho Soil Survey, examined soils at 21 Idaho sites. In spite of these efforts, 45 soils could not be identified as to series and are designated as desert, desert playa, alluvial bottom, mountain valley, or mountain soils in the tables. Nearly all the unidentified soils were in areas that had not been surveyed, though a number were in surveyed areas where they could not be correlated with known series.

The general locations of the sites are shown in figure 1, in which each dot represents a weather station. One to five sites were located within five miles of each weather station. The weather station and sampling site were not always in the same county.

Tables 2 to 4 (one table for each State) characterize individual sample sites and summarize information on soil properties. The published records of the listed weather stations give the approximate longitude, latitude, and climate of the sites. In these tables, "vegetation and land use" refers to the cover type on the site and to any disturbance caused by man, such as cultivation, grazing, or the cutting of hay. Where none of these disturbances had occurred within five years, the site was classed as undisturbed.

No sites were established on recently logged areas but a few sites were on land that was in cultivation in 1954. Areas that were not in cultivation during 1954 but had been cultivated sometime within the five years preceding the study were classed as cultivated previously, now grazed if they were being currently grazed by livestock; and as cultivated previously, now in hay if the cover was being cut for hay.

Areas that had not been cultivated for five years were classed

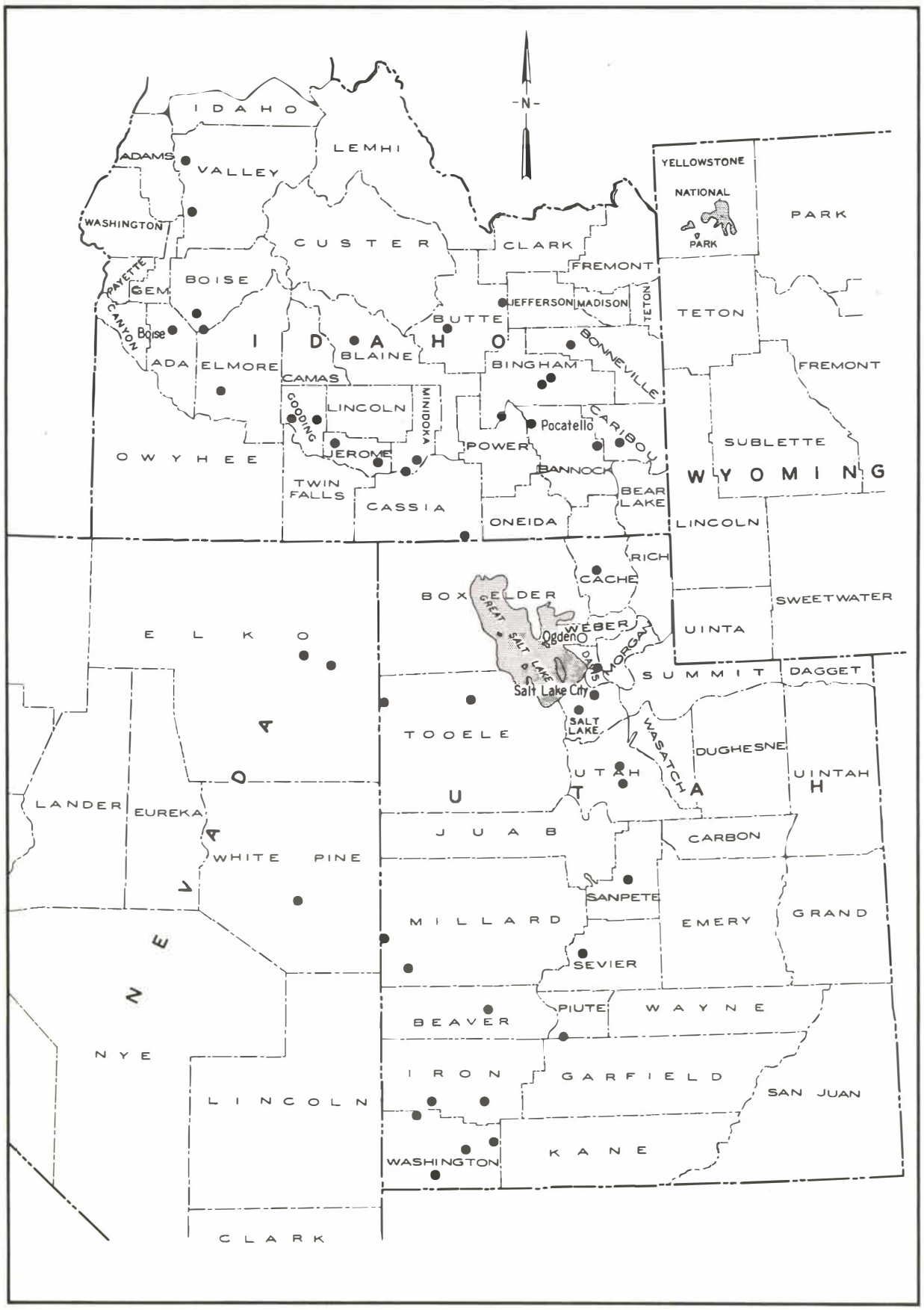


Fig. 1. Location of the sites

Table 1.—List of soil series by states

Series	State	Series	State
Airport	Utah	Minidoka	Idaho
Bannock	Idaho	Moscow	Idaho
Beverly	Idaho	Musinia	Utah
Billings	Utah	Onyx	Idaho
Blackfoot	Idaho	Palisade	Utah
Bracken	Utah	Paul	Idaho
Chilcott	Idaho	Portneuf	Idaho
Churchill	Idaho	Power	Idaho
Conda	Idaho	Redfield	Utah
Declo	Idaho	Red Rock	Utah
Falk	Idaho	Ritzville	Idaho
Farmington	Utah	Rupert	Idaho
Fingal	Idaho	Sagemoor	Idaho
Gila	Utah	Salt Air	Utah
Gooding	Idaho	Salt Lake	Utah
Goose Creek	Idaho	St. George	Utah
Hyrum	Idaho	Sweet	Idaho
Ironton	Utah	Tabiona	Utah
Kilmerque	Idaho	Taylorsville	Utah
Kirkham	Utah	Terminal	Utah
La Verkin	Utah	Timpanogas	Utah
Mannassa	Utah	Tobler	Utah
Mayfield	Utah	Trenton	Utah
McBeth	Utah	View	Idaho
Mellor	Utah	Walla Walla	Idaho
Millard	Utah	Welby	Utah
Millville	Utah		

Series Unidentified

Location	State	Number of Sites
Desert	Idaho	7
Desert	Nevada	7
Desert	Utah	10
Desert playa	Utah	1
Alluvial bottom	Idaho	4
Alluvial bottom	Nevada	1
Mountain	Idaho	3
Mountain	Utah	7
Mountain valley	Idaho	1
Mountain valley	Nevada	1
Mountain valley	Utah	3
		45

as lightly grazed if they showed some animal use; as moderately grazed if they were being properly managed for grazing; as heavily grazed if in poor condition; as hay if no grazing was apparent and the cover cut for hay; and as bare if vegetation was negligible.

The soil properties were determined from bulk samples and 2-inch cores taken randomly from a 12 by 18-foot plot at each site. Bulk samples, composited from six locations, were taken from the 0 to 6-inch, 6 to 12-inch, and the 12 to 18-inch layers for determination of mechanical analysis, plasticity constants, and organic matter content. No samples were taken below 18 inches.

Texture class follows the terminology given in the U. S. Department of Agriculture Soil Survey Manual, p. 210.[1/] The following symbols are used, alone or in combination:

S = sand

Si = silt

C = clay

L = loam

The mechanical composition was determined at the Mississippi Agricultural Experiment Station by a combination sieve and hydrometer method. The separation of medium- from fine-sized particles was based on Bouyoucos hydrometer readings taken only one hour after the suspension was mixed and adjusted to a pH of 9.5 with 0.01N sodium hydroxide. The figures for fine-particle content may thus include a portion of the particles usually classified as fine silt. However, the medium- and fine-sized particles are reported as silt and clay, respectively. The figures are expressed in the table as percent of dry weight.

Organic-matter determinations were made by a modified Walkley rapid-dichromate oxidation method[2/] at the Mississippi Agricultural

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1/ Soil Survey staff, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering.
Soil survey manual. U. S. Dept. Agr. Handbook 18, 503 pp., illus. 1951.

2/ Peech, M., Alexander, L. T., Dean, L. A., and Reed, J. F.
Methods of soil analysis for soil-fertility investigations.
U. S. Dept. Agr. Cir. 757, 25 pp. 1947.

Experiment Station and are expressed as percent by weight. The loss-on-ignition method, following modified procedures of the Association of Official Agricultural Chemists, 3/ was used for samples when the organic matter content was determined as over five percent by the Walkley method.

Stone content was estimated visually in the field for soils having significant proportions of fragments coarser than 2 mm. In some cases, stones of boulder size occurred on the sites. Stone content is expressed as percent of the total volume of soil in each 6-inch layer.

The presence of free carbonates in the soil was tested for each 6-inch depth by the use of 10 percent hydrochloric acid. The reaction is recorded as V, violent; St, strong; Sl, slight effervescence; and N, no reaction.

The pH reaction was determined in the field by use of indicator dyes (U. S. Department of Agriculture Soil Survey Manual, p. 238).

The plasticity constants of the 6 to 12-inch layer were determined by the Soils Laboratory of the Waterways Experiment Station. 4/ The figures are expressed as moisture content in percent of dry weight.

Bulk density and tension analysis were determined from 2-inch cores obtained with the modified San Dimas or drive-type sampler 5/ when the soil was moist. Cores were taken in duplicate at the 0 to 3-inch, 3 to 6-inch, 6 to 9-inch, and 9 to 12-inch depths and averaged in the table by 6-inch layers. The moisture held by the soil at zero tension (saturation) was determined by weighing the 2-inch cores after they had been soaked in a pan of water. As some water was lost during transfer,

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3/ Association of Official Agricultural Chemists.
Methods of analysis. Ed. 6, 932 pp., illus. Washington, D. C., 1945.

4/ Waterways Experiment Station.
Soils Laboratory manual—Lower Mississippi Valley Division. Section 111, mechanical analysis. U. S. Army, Waterways Experiment Station, 16 pp., illus. 1951.

5/ Broadfoot, W. M.
Procedures and equipment for determining soil bulk density. U. S. Forest Service, Southern Forest Expt. Sta. Occas. Paper 135, pp. 2-11, illus. 1954.

and as all pores are usually not filled by this method, these values are frequently less than the theoretical maximum. The 0.06 atm tension values were determined by use of a tension table.[6/] The tension values are expressed in percent of dry weight.

6/ Leamer, R. W., and Shaw, B.
A simple apparatus for measuring non-capillary porosity on an extensive scale. Jour. Amer. Soc. Agron. 33:1003. 1941.

Table 2. Idaho soil series: site descriptions and soil properties

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent: Sand	Silt	Clay	Organic matter by weight percent	Stone content, by volume percent	Soil reaction: Free carbonates	pH	Plasticity constants by weight percent: Liquid limit	Plastic limit	Plasticity index	Bulk density grams per cc.	Soil moisture by weight, percent: Saturation	1/3 Atmosphere tension
Bannock	36	Pocatello, Bannock	Alfalfa, cultivated previously, now in hay	Terrace level 4,440	0-6	SiL	23	55	22	1.65	0	St.	8.0				1.57	25.9	22.5
					6-12	SiL	18	57	25	.86	0	St.	8.0	26	21	5	1.56	25.8	23.4
					12-18	SiL	14	59	27	.78	0	V	8.2				---	---	---
Bannock	45	Blackfoot, Bingham	Grasses, moderately grazed	Terrace level 4,550	0-6	L	41	41	18	2.47	0	Sl.	8.0				1.44	29.6	25.6
					6-12	L	36	47	17	1.15	0	V	8.0	22	19	3	1.60	23.6	20.7
					12-18	L	35	47	18	.62	0	V	8.2				---	---	---
Bannock	47	Idaho Falls Airport, Bonneville	Alfalfa, cultivated previously, now in hay	Terrace level 4,700	0-6	L	33	48	19	1.33	0	Sl.	8.2				1.54	25.4	22.6
					6-12	L	45	40	15	.86	0	Sl.	8.2	24	18	6	1.68	21.0	19.3
					12-18	L	39	42	19	.70	0	Sl.	8.2				---	---	---
Bannock	49	Idaho Falls 6 N.E. Bonneville	Alfalfa-clover, hay	Terrace level 4,840	0-6	SL	68	20	12	1.25	0	St.	8.4				1.47	28.0	22.5
					6-12	SL	70	19	11	.78	0	St.	8.2	34	19	15	1.56	24.4	20.8
					12-18	SL	62	22	16	.78	0	V	8.4				---	---	---
Beverly	46	Blackfoot, Bingham	Grasses, lightly grazed	Terrace level 4,550	0-6	L	48	34	18	1.77	0	St.	8.0				1.42	30.5	27.6
					6-12	L	51	34	15	.86	0	Sl.	8.0		Non-plastic		1.60	23.2	21.3
					12-18	SL	59	28	13	.70	0	St.	8.2				---	---	---
Blackfoot	44	Blackfoot, Bingham	Grasses and grass-like plants, moderately grazed	Bottom level 4,540	0-6	LS	79	17	4	.95	0	St.	8.6				1.41	33.4	28.3
					6-12	LS	85	9	6	.78	0	St.	8.2		Non-plastic		1.60	22.9	15.9
					12-18	LS	86	9	5	.55	0	Sl.	8.0				---	---	---
Chilcott	67	Mountain Home, Elmore	Sagebrush-grasses, lightly grazed	Upland 1 percent 3,200	0-6	CL	21	43	36	1.77	0	N	8.0				1.36	33.8	26.9
					6-12	C	18	38	44	1.55	0	N	8.0	47	24	23	1.28	39.2	31.5
					12-18	CL	39	33	28	.86	0	N	8.0				---	---	---
Chilcott	75	Boise, Ada	Sagebrush-grasses, lightly grazed	Upland 2 percent 2,850	0-6	SiL	13	62	25	1.77	0	N	8.2				1.39	30.7	25.1
					6-12	SiL	14	60	26	.95	0	N	8.2	28	20	8	1.41	31.4	27.8
					12-18	SiCL	11	55	34	.95	0	N	8.2				---	---	---
Churchill	26	Conda, Caribou	Grasses-weeds, lightly grazed	Upland 1 percent 6,200	0-6	L	34	42	24	5.24	0	V	9.0				.96	64.3	54.7
					6-12	L	48	40	12	2.23	0	V	9.2		Non-plastic		1.18	45.2	37.2
					12-18	L	43	47	10	1.88	0	V	9.2				---	---	---
Conda	25	Conda, Caribou	Grasses-weeds, lightly grazed	Upland 3 percent 6,200	0-6	L	37	46	17	4.90	5	V	8.8				1.13	48.0	39.8
					6-12	L	33	47	20	4.90	5	V	8.8	37	32	5	1.15	47.9	41.0
					12-18	L	35	45	20	3.96	5	V	8.8				---	---	---
Declo	37	Aberdeen, Bingham	Sagebrush-grasses, lightly grazed	Terrace 1 percent 4,410	0-6	SiL	34	51	15	1.45	0	St.	8.2				1.41	31.0	27.6
					6-12	SiL	23	55	22	1.05	0	St.	9.0	26	19	7	1.32	37.8	32.3
					12-18	SiL	16	61	23	.78	0	V	9.0				---	---	---
Declo	38	Aberdeen, Bingham	Alfalfa, cultivated previously, now in hay	Terrace level 4,420	0-6	SiL	24	51	25	1.65	0	N	7.8				1.43	31.2	27.6
					6-12	L	30	48	22	1.45	0	Sl.	7.8	29	19	10	1.54	26.1	23.8
					12-18	SiL	26	52	22	.78	0	V	8.0				---	---	---
Falk	76	Boise, Ada	Grasses, moderately grazed	Bottom level 2,835	0-6	SiL	24	56	20	2.75	5	N	8.2				1.36	36.1	30.9
					6-12	SiL	29	52	19	1.33	5	N	8.2	25	20	5	1.52	27.0	24.6
					12-18	L	32	49	19	1.05	5	N	8.2				---	---	---
Fingal	41	Springfield, Bingham	Grasses, grease-wood, lightly grazed	Terrace 1 percent 4,350	0-6	SL	57	29	14	1.15	0	V	8.6				1.62	21.5	18.5
					6-12	SL	62	27	11	.46	0	V	8.4	--	15	--	1.70	20.2	16.8
					12-18	SL	54	31	15	.46	0	V	8.2				---	---	---
Fingal	43	Blackfoot, Bingham	Grasses, moderately grazed	Bottom 1 percent 4,550	0-6	LS	78	17	5	.70	0	Sl.	9.2				1.46	30.5	15.9
					6-12	SL	72	23	5	.70	0	Sl.	9.2		Non-plastic		1.64	21.3	17.4
					12-18	SL	73	20	7	.62	0	Sl.	9.4				---	---	---
Gooding	61	Gooding Airport, Gooding	Grasses-weeds, lightly grazed	Terrace 1 percent 3,550	0-6	SCL	52	26	22	2.08	2	N	8.2				1.56	25.4	20.4
					6-12	L	46	33	21	1.65	2	N	8.2	25	15	10	1.72	19.8	17.2
					12-18	L	47	33	20	1.05	30	Sl.	8.2				---	---	---
Gooding	62	Gooding Airport, Gooding	Grasses, lightly grazed	Terrace 1 percent 3,600	0-6	LS	77	17	6	.70	0	N	7.8				1.52	25.8	11.0
					6-12	S	91	6	3	.32	0	N	8.0		Non-plastic		1.52	25.8	10.1
					12-18	LS	85	9	6	.38	0	N	8.0				---	---	---
Goose Creek	86	Burley Airport, Cassia	Grasses, lightly grazed	Terrace level 4,100	0-6	CL	28	41	31	2.47	0	N	8.2				1.09	50.0	37.8
					6-12	CL	25	44	31	2.47	0	N	8.2	38	24	14	1.22	41.8	34.5
					12-18	SiCL	16	47	37	2.47	0	N	8.2				---	---	---
Hyrum	31	Bancroft, Caribou	Grain, cultivated	Upland 2 percent 5,400	0-6	CL	22	51	27	2.35	5	N	--				1.28	37.9	31.5
					6-12	CL	21	50	29	1.33	5	N	--	32	18	14	1.50	27.0	25.0
					12-18	CL	21	45	34	1.05	5	N	--				---	---	---

(Continued)

Table 2. Idaho soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	.06 Atmosphere tension
Kilmerque (Like)	70	Idaho City 13 SW, Boise	Ponderosa pine, undisturbed	Upland 10 percent 5,000	0-6	SL	55	28	17	3.27	5	N	7.6				1.61	21.7	18.4
					6-12	SL	51	30	19	1.05	15	N	7.4	--	14	--	1.79	16.2	14.7
					12-18	SL	65	21	14	.70	30	N	7.6				---	---	---
Minidoka	65	Bliss, Gooding	Grasses, moderately grazed	Upland level 3,100	0-6	SL	55	30	15	1.65	0	Sl.	8.2				1.47	28.4	24.2
					6-12	L	44	39	17	1.25	0	St.	8.4	28	21	7	1.44	30.5	26.7
					12-18	L	42	32	26	.38	0	V	8.8				---	---	---
Minidoka	81	Hazelton, Jerome	Grain, cultivated	Upland level 4,060	0-6	SiL	19	55	26	1.88	0	St.	8.0				1.19	44.7	32.4
					6-12	SiL	18	56	26	1.55	0	Sl.	8.4	29	20	9	1.31	34.9	27.5
					12-18	SiL	16	59	25	1.25	0	Sl.	8.2				---	---	---
Moscow (Like)	71	Idaho City 13 SW, Boise	Ponderosa pine, undisturbed	Upland 30 percent 4,500	0-6	SL	69	21	10	2.23	10	N	7.4				1.62	18.9	14.5
					6-12	SL	65	24	11	.38	15	N	7.6		Non-plastic		1.66	21.0	12.4
					12-18	SL	75	15	10	.32	30	N	7.6				---	---	---
Moscow (Like)	88	Cascade 1 NW, Valley	Lodgepole pine, undisturbed	Upland 30 percent 5,200	0-6	SL	58	28	14	2.47	5	N	7.0				1.34	34.8	23.9
					6-12	SL	70	20	10	.62	10	N	6.6		Non-plastic		1.52	26.9	17.0
					12-18	SL	73	17	10	.46	15	N	6.6				---	---	---
Onyx	32	Pocatello, Bannock	Grasses-sagebrush, moderately grazed	Terrace 5 percent 4,500	0-6	SiL	21	65	14	2.08	5	St.	8.0				1.30	38.9	34.5
					6-12	L	37	43	20	1.25	5	St.	8.8	23	21	2	1.32	38.5	33.8
					12-18	SiL	23	59	18	.95	8	V	8.8				---	---	---
Paul	48	Idaho Falls 6 NE, Bonneville	Grasses-alfalfa, cultivated previously, now lightly grazed	Terrace level 4,800	0-6	SiCL	18	48	34	3.13	0	V	8.2				1.36	35.0	26.7
					6-12	SiCL	19	50	31	1.98	0	V	8.2	34	19	15	1.38	35.3	28.9
					12-18	L	33	42	25	1.25	0	V	8.8				---	---	---
Paul	83	Rupert, Minidoka	Alfalfa, cultivated previously, now moderately grazed	Terrace level 4,200	0-6	SiCL	20	51	29	1.88	0	N	8.0				1.49	27.6	23.6
					6-12	CL	27	44	29	1.25	0	Sl.	8.0	32	17	15	1.56	25.0	22.9
					12-18	SiC	14	43	43	1.15	0	N	8.0				---	---	---
Paul	85	Rupert, Minidoka	Grasses-weeds, lightly grazed	Terrace 2 percent 4,150	0-6	S	89	6	5	.62	0	N	8.2				1.56	23.4	11.4
					6-12	SL	53	38	9	.25	0	N	8.2		Non-plastic		1.57	22.5	9.4
					12-18	L	51	34	15	.25	0	N	8.2				---	---	---
Portneuf	34	Pocatello, Bannock	Grasses, hay	Terrace level 4,440	0-6	SiL	18	67	15	1.45	0	Sl.	8.0				1.14	46.6	36.0
					6-12	SiL	15	66	19	1.45	0	St.	8.2	30	26	4	1.34	35.5	29.8
					12-18	SiL	16	61	23	1.25	0	V	8.2				---	---	---
Portneuf	35	Pocatello, Bannock	Grasses-sagebrush, cultivated previously, now lightly grazed	Upland 1 percent 4,480	0-6	SiL	25	60	15	1.65	0	St.	8.2				1.28	39.7	32.9
					6-12	SiL	21	64	15	1.05	0	St.	8.4	24	22	2	1.18	46.8	40.0
					12-18	SiL	17	73	10	.95	0	St.	8.4				---	---	---
Portneuf	50	Idaho Falls Airport, Bonneville	Grasses, undisturbed	Upland level 4,730	0-6	SiL	36	56	8	1.25	0	St.	8.2				1.48	32.2	28.0
					6-12	SiL	35	50	15	.78	0	St.	8.2	24	22	2	1.47	31.9	28.0
					12-18	SiL	24	61	15	.62	0	V	8.2				---	---	---
Portneuf	51	Idaho Falls Airport, Bonneville	Grasses-yellow brush, undisturbed	Upland level 4,760	0-6	SiL	20	62	18	1.77	0	Sl.	8.6				1.43	34.3	29.5
					6-12	SiL	13	67	20	1.15	0	Sl.	8.6	31	23	8	1.32	39.8	35.2
					12-18	SiL	14	71	15	.32	0	St.	8.6				---	---	---
Portneuf	52	A.E.C. Reactor Station, Bingham	Sagebrush-grasses, lightly grazed	Upland level 4,950	0-6	CL	21	50	29	2.60	2	Sl.	8.2				1.32	37.2	29.8
					6-12	CL	23	44	33	1.33	2	St.	8.4	34	21	13	1.38	35.6	31.2
					12-18	CL	26	47	27	.86	2	V	8.4				---	---	---
Portneuf	53	A.E.C. Reactor Station, Bingham	Sagebrush-grasses, lightly grazed	Upland level 4,950	0-6	CL	32	39	29	1.65	5	N	8.0				1.38	34.5	28.4
					6-12	CL	22	46	32	1.25	10	V	8.2	34	20	14	1.37	34.5	29.5
					12-18	SiCL	17	44	39	1.05	15	V	8.2				---	---	---
Portneuf	63	Gooding Airport, Gooding	Grasses, cultivated previously, now lightly grazed	Upland 2 percent 3,630	0-6	L	40	39	21	1.77	0	N	8.2				1.27	38.9	32.3
					6-12	SCL	51	27	22	.78	0	N	8.2	28	19	9	1.45	29.3	25.4
					12-18	L	31	44	25	.70	0	N	8.2				---	---	---
Portneuf	64	Bliss, Gooding	Sagebrush-grasses, heavily grazed	Upland 1 percent 3,260	0-6	L	49	42	9	1.05	0	N	8.2				1.42	32.8	28.5
					6-12	L	47	39	14	.70	0	St.	8.4		Non-plastic		1.38	35.7	31.0
					12-18	L	37	46	17	.86	0	V	8.8				---	---	---

(Continued)

Table 2. Idaho soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent: Sand	Silt	Clay	Organic matter by weight percent	Stone content, by volume percent	Soil reaction: Free carbonates	pH	Plasticity constants by weight percent: Liquid limit	Plastic limit	Plasticity index	Bulk density grams per cc.	Soil moisture by weight, percent: Saturation	.06 Atmosphere tension
Portneuf	66	Bliss, Gooding	Sagebrush-grasses, lightly grazed	Upland 2 percent 3,360	0-6	L	47	42	11	1.25	1	N	8.0				1.37	32.6	26.5
					6-12	L	37	42	21	.70	1	N	8.2	26	18	8	1.38	33.9	26.1
					12-18	L	34	43	23	.55	5	Sl.	9.0				---	---	---
Portneuf	78	Jerome, Jerome	Grasses-clover, cultivated previously, now in hay	Upland level 3,750	0-6	SL	58	25	17	1.05	0	N	8.0				1.65	20.4	17.4
					6-12	SL	56	26	18	.86	5	V	8.0	21	17	4	1.73	18.5	16.6
					12-18	SCL	51	24	25	.70	40	V	8.8				---	---	---
Portneuf	79	Jerome, Jerome	Alfalfa, cultivated previously, now in hay	Upland 3 percent 3,850	0-6	SL	52	30	18	1.05	0	N	8.0				1.54	24.7	21.7
					6-12	SL	57	25	18	.55	0	N	8.0	22	19	3	1.68	21.0	18.9
					12-18	SL	58	26	16	.46	0	V	8.0				---	---	---
Portneuf	80	Jerome, Jerome	Grain, cultivated	Upland level 3,860	0-6	L	38	44	18	1.15	0	Sl.	8.6				1.48	28.9	25.6
					6-12	L	36	45	19	.70	0	St.	8.2	25	20	5	1.56	26.3	24.1
					12-18	SiL	30	51	19	.62	0	St.	8.6				---	---	---
Portneuf	82	Hazelton, Jerome	Grasses, lightly grazed	Upland 2 percent 4,060	0-6	SiL	13	66	21	2.47	0	St.	8.2				1.36	35.5	31.7
					6-12	SiCL	9	61	30	1.98	0	St.	8.2	33	21	12	1.45	30.9	29.3
					12-18	SiL	12	64	24	1.65	0	St.	8.2				---	---	---
Power	68	Mountain Home, Elmore	Grasses-weeds, moderately grazed	Terrace 1 percent 3,180	0-6	L	28	46	26	1.77	5	N	8.2				1.40	32.1	26.7
					6-12	CL	28	40	32	1.55	15	N	8.2	35	20	15	1.32	38.8	29.0
					12-18	CL	21	39	40	.86	30	V	9.0				---	---	---
Ritzville	29	Bancroft, Caribou	Grasses, undisturbed	Upland 5 percent 5,460	0-6	SiL	19	61	20	1.45	2	N	8.0				1.21	41.7	33.6
					6-12	SiL	18	60	22	1.15	3	N	8.4	30	20	10	1.40	31.5	27.7
					12-18	SiL	25	58	17	.86	5	V	8.6				---	---	---
Ritzville	30	Bancroft, Caribou	Grain, cultivated	Upland 3 percent 5,450	0-6	SiL	18	62	20	2.08	5	N	8.8				1.20	41.9	35.5
					6-12	SiL	16	64	20	1.15	5	N	8.4	28	20	8	1.31	36.0	31.2
					12-18	SiL	18	62	20	.95	5	V	8.8				---	---	---
Rupert	84	Rupert, Minidoka	Alfalfa, cultivated previously, now in hay	Terrace level 4,200	0-6	SL	61	28	11	1.15	0	N	8.2				1.59	23.0	16.5
					6-12	SL	56	25	19	.78	0	N	8.2	--	13	--	1.69	19.9	14.8
					12-18	SL	58	29	13	.70	0	N	8.2				---	---	---
Sagemoor	39	Aberdeen, Bingham	Alfalfa, cultivated previously, now in hay	Terrace level 4,490	0-6	L	29	49	22	2.47	0	Sl.	8.2				1.48	28.8	26.4
					6-12	L	28	48	24	.86	0	V	8.2	32	20	12	1.50	28.0	25.1
					12-18	SiL	21	52	27	.70	0	V	8.4				---	---	---
Sagemoor	40	Springfield, Bingham	Alfalfa, cultivated previously, now in hay	Terrace level 4,405	0-6	L	51	30	19	1.05	0	V	8.4				1.53	28.0	24.4
					6-12	L	50	34	16	.55	0	V	8.4	Non-plastic			1.53	27.6	22.9
					12-18	SL	57	29	14	.46	0	V	8.4				---	---	---
Sagemoor	42	Springfield, Bingham	Alfalfa, cultivated previously, now in hay	Terrace 2 percent 4,405	0-6	L	30	46	24	2.47	0	V	8.2				1.31	36.7	32.4
					6-12	SiCL	19	51	30	1.33	0	V	8.2	40	22	18	1.31	37.1	31.9
					12-18	SiL	22	57	21	.95	0	V	8.2				---	---	---
Sweet (Like)	72	Arrowrock Dam, Boise	Sagebrush-grasses, lightly grazed	Upland 12 percent 3,900	0-6	L	40	38	22	3.00	5	N	7.6				1.56	23.3	18.5
					6-12	L	48	32	20	1.45	10	N	7.8	28	20	8	1.56	23.9	17.9
					12-18	L	50	31	19	1.25	20	N	7.8				---	---	---
Sweet (Like)	73	Arrowrock Dam, Ada	Sagebrush, bitterbrush, grasses, lightly grazed	Upland 10 percent 3,800	0-6	L	49	34	17	3.27	2	N	7.6				1.55	24.0	20.0
					6-12	L	50	31	19	2.47	2	N	7.8	23	15	8	1.54	25.2	20.0
					12-18	L	48	31	21	1.15	3	N	7.8				---	---	---
View	87	Burley Airport, Cassia	Grasses, moderately grazed	Terrace level 4,100	0-6	SL	55	25	20	2.08	0	St.	8.0				1.36	29.7	24.1
					6-12	SL	60	24	16	.78	0	St.	8.2	Non-plastic			1.37	28.4	21.9
					12-18	SL	58	24	18	.78	0	V	8.4				---	---	---
Walla Walla	27	Conda, Caribou	Sagebrush-grasses, lightly grazed	Upland 1 percent 6,200	0-6	SiL	9	65	26	3.96	0	N	8.2				1.36	33.9	31.8
					6-12	SiL	9	66	25	2.35	0	N	8.2	34	21	13	1.42	31.1	29.5
					12-18	SiCL	13	59	28	1.55	0	N	8.2				---	---	---
Walla Walla	28	Conda, Caribou	Grain, cultivated	Upland 3 percent 6,200	0-6	SiL	11	63	26	3.27	0	N	8.0				1.40	32.8	30.2
					6-12	SiL	10	64	26	1.77	0	N	8.0	33	20	13	1.38	32.6	29.2
					12-18	SiL	12	61	27	1.25	0	N	8.0				---	---	---
SERIES UNIDENTIFIED:																			
Desert	54	Arco, Butte	Sagebrush-weeds, lightly grazed	Terrace 3 percent 5,340	0-6	L	37	45	18	2.08	0	Sl.	8.8				1.26	40.3	35.6
					6-12	L	42	40	18	1.45	0	Sl.	8.6	24	21	3	1.26	39.8	34.4
					12-18	L	34	45	21	1.45	0	V	8.4				---	---	---

(Continued)

Table 2. Idaho soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation	Depths sampled inches	Texture class	Mechanical analysis by weight percent: Sand	Silt	Clay	Organic matter by weight percent	Stone content, by volume percent	Soil reaction: Free carbonates	pH	Plasticity constants by weight percent: Liquid limit	Plastic limit	Plasticity index	Bulk density grams per cc.	Soil moisture by weight, percent: Saturation	.06 Atmosphere tension
SERIES UNIDENTIFIED (Continued):																			
Desert	55	Arco, Butte	Alfalfa, cultivated previously, now in hay	Terrace 2 percent 5,335	0-6	L	35	46	19	2.60	0	St.	8.2				1.37	33.8	29.5
					6-12	L	31	49	20	1.33	0	V	8.2	27	25	2	1.41	32.9	28.4
					12-18	L	37	45	18	.95	0	V	8.2				---	---	---
Desert	57	Arco, Butte	Yellow brush-grasses, lightly grazed	Terrace level 5,350	0-6	SL	60	22	18	.78	5	N	8.0				1.59	23.1	19.0
					6-12	L	44	30	26	.78	5	N	8.0	22	18	4	1.59	23.2	19.4
					12-18	SL	59	24	17	.62	5	N	8.0				---	---	---
Desert	69	Mountain Home, Elmore	Sagebrush-grasses, moderately grazed	Terrace 1 percent 3,170	0-6	L	42	38	20	2.23	1	St.	8.2				1.43	29.2	23.7
					6-12	L	42	40	18	1.15	1	St.	8.4	26	20	6	1.40	30.8	25.2
					12-18	L	26	47	27	.86	1	St.	8.4				---	---	---
Desert	74	Boise, Ada	Rabbit brush-grasses, moderately grazed	Terrace 1 percent 2,650	0-6	SiL	11	64	25	3.41	0	N	8.0				1.11	50.0	41.8
					6-12	SiCL	10	62	28	2.60	0	N	8.0	39	27	12	1.08	51.4	44.6
					12-18	SiC	10	41	49	2.47	0	St.	8.8				---	---	---
Desert	92	Bridge, Cassia	Grease-wood, weeds, moderately grazed	Terrace 1 percent 5,100	0-6	SiC	6	53	41	4.52	0	St.	8.6				1.02	57.9	43.0
					6-12	SiC	9	49	42	3.69	0	St.	8.4	42	25	17	1.08	53.0	38.0
					12-18	SiC	9	52	39	1.65	0	N	8.0				---	---	---
Desert	93	Bridge, Cassia	Rabbit brush-sagebrush, grease-wood, lightly grazed	Terrace 1 percent 5,100	0-6	SiC	11	40	49	5.68	0	Sl.	8.2				.92	65.9	45.1
					6-12	C	2	39	59	3.41	0	Sl.	8.2	55	32	23	1.00	59.7	40.8
					12-18	SiC	5	49	46	2.75	0	Sl.	8.7				---	---	---
Alluvial Bottom	56	Arco, Butte	Grasses, hay	Terrace level 5,320	0-6	SiCL	14	48	38	5.24	0	V	9.0				1.22	43.4	38.4
					6-12	SiCL	16	50	34	2.60	0	V	8.4	45	26	19	1.28	40.6	36.9
					12-18	L	32	43	25	2.08	0	N	7.6				---	---	---
Alluvial Bottom	58	Hailey, Blaine	Grasses, moderately grazed	Terrace level 5,250	0-6	L	37	41	22	6.04	0	N	8.4				1.11	44.9	38.0
					6-12	L	36	41	23	3.96	0	N	8.4	36	31	5	1.13	47.4	41.7
					12-18	L	40	39	21	2.47	0	N	8.4				---	---	---
Alluvial Bottom	60	Hailey, Blaine	Grasses, lightly grazed	Bottom 1 percent 5,480	0-6	L	36	43	21	11.36	5	N	8.6				.92	68.3	59.9
					6-12	CL	26	46	28	6.40	5	N	8.4	62	49	13	.82	81.5	76.8
					12-18	SiCL	19	48	33	6.04	30	N	8.4				---	---	---
Alluvial Bottom	77	Cascade 1 NW, Valley	Lodgepole pine-grasses, lightly grazed	Bottom 1 percent 4,800	0-6	L	40	39	21	3.96	1	N	7.2				1.07	52.4	44.8
					6-12	L	52	28	20	2.08	2	N	6.4	Non-plastic			1.16	44.9	39.6
					12-18	SL	72	18	10	.95	2	N	6.4				---	---	---
Mountain	59	Hailey, Blaine	Sagebrush-grasses, lightly grazed	Upland 6 percent 5,351	0-6	L	34	40	26	3.27	5	N	8.0				1.42	31.1	26.5
					6-12	CL	31	37	32	1.15	10	N	8.4	29	18	11	1.58	24.9	22.6
					12-18	CL	28	42	30	.78	30	N	8.2				---	---	---
Mountain	90	McCall, Valley	Ponderosa pine-grasses, undisturbed	Upland level 5,100	0-6	L	29	48	23	6.04	1	N	6.4				.97	64.4	50.0
					6-12	SiCL	16	49	35	4.05	1	N	6.8	40	28	12	1.15	47.9	40.0
					12-18	CL	25	43	32	2.08	1	N	6.8				---	---	---
Mountain	91	McCall, Adams	Lodgepole pine-grasses, undisturbed	Upland 15 percent 5,025	0-6	SiL	24	54	22	5.34	10	N	6.4				1.08	55.0	44.4
					6-12	L	29	45	26	3.54	15	N	6.6	36	27	9	1.30	40.0	35.8
					12-18	L	33	42	25	2.35	35	N	6.7				---	---	---
Mountain Valley	89	Cascade 1 NW, Valley	Grasses-clover, cultivated previously, now lightly grazed	Terrace 3 percent 4,812	0-6	CL	26	40	34	4.70	1	N	8.0				1.28	37.8	34.3
					6-12	CL	23	40	37	3.69	1	N	7.8	36	22	14	1.24	40.2	35.8
					12-18	CL	24	41	35	2.47	5	N	7.8				---	---	---

Table 3. Nevada soil series: site descriptions and soil properties

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent: Sand	Silt	Clay	Organic matter by weight percent	Stone content, by volume percent	Soil reaction: Free carbonates	pH	Plasticity constants by weight percent: Liquid limit	Plastic limit	Plasticity index	Bulk density grams per cc.	Soil moisture by weight, percent: Saturation	.06 Atmosphere tension
SERIES UNIDENTIFIED:																			
Desert	132	Ely, White Pine	Sagebrush-yellow brush, greasewood, lightly grazed	Upland 1 percent 6,410	0-6	CL	29	41	30	2.08	0	V	--				1.12	48.9	39.2
					6-12	CL	35	36	29	1.05	0	V	--	25	17	8	1.28	38.7	33.2
					12-18	CL	38	35	27	.86	0	V	--				---	---	---
Desert	134	Ely, White Pine	Greasewood, lightly grazed	Upland 3 percent 6,400	0-6	L	37	40	23	2.47	5	V	--				1.27	37.3	28.9
					6-12	CL	36	32	32	1.05	5	V	--	25	17	8	1.28	37.0	29.4
					12-18	CL	32	32	36	.38	5	V	--				---	---	---
Desert	136	Wells, Elko	Sagebrush, lightly grazed	Upland 1 percent 5,650	0-6	CL	38	30	32	1.45	5	Sl.	8.4				1.37	32.8	24.9
					6-12	CL	37	29	34	1.05	5	St.	8.4	30	17	13	1.44	30.9	27.6
					12-18	CL	30	33	37	.86	5	V	8.8				---	---	---
Desert	137	Wells, Elko	Sagebrush, lightly grazed	Upland 1 percent 5,635	0-6	SiL	19	57	24	2.87	0	Sl.	8.6				1.32	34.0	28.9
					6-12	SiL	22	52	26	1.88	0	V	9.2	35	24	11	1.48	27.8	23.6
					12-18	CL	24	46	30	.86	0	V	9.2				---	---	---
Desert	140	Pequop, Elko	Sagebrush, lightly grazed	Upland 2 percent 6,600	0-6	L	30	46	24	2.35	5	Sl.	8.2				1.48	28.4	20.8
					6-12	L	40	38	22	1.77	15	Sl.	8.2	20	17	3	1.63	22.4	17.4
					12-18	SL	71	19	10	1.45	65	V	8.8				---	---	---
Desert	135	Wells, Elko	Sagebrush, lightly grazed	Upland 2 percent 5,725	0-6	C	24	35	41	1.25	10	N	8.4				1.35	37.3	32.5
					6-12	SCL	50	20	30	.78	25	N	8.4	44	22	22	1.32	34.0	22.2
					12-18	CL	44	18	38	.70	50	N	8.4				---	---	---
Desert	138	Pequop, Elko	Sagebrush-grasses, lightly grazed	Upland 5 percent 6,950	0-6	L	38	36	26	.86	5	N	--				1.46	30.6	14.1
					6-12	L	40	37	23	.78	5	N	--		Non-plastic		1.51	28.2	13.8
					12-18	L	32	44	24	.78	10	N	--				---	---	---
Mountain Valley	133	Ely, White Pine	Grasslike plants-grasses, moderately grazed	Bottom level 6,385	0-6	CL	23	45	32	6.76	5	V	--				1.14	52.3	48.0
					6-12	CL	23	41	36	4.90	5	V	--	45	35	10	1.24	43.7	41.0
					12-18	CL	29	40	31	4.90	5	V	--				---	---	---
Alluvial Bottom	139	Pequop, Elko	Sagebrush, lightly grazed	Bottom level 6,800	0-6	SiCL	12	54	34	6.52	0	Sl.	--				1.08	48.3	41.9
					6-12	SiCL	9	55	36	5.80	0	N	--	48	30	18	1.08	51.3	44.5
					12-18	SiC	8	50	42	5.34	0	N	--				---	---	---

Table 4. Utah soil series: site descriptions and soil properties

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent: Sand	Silt	Clay	Organic matter by weight percent	Stone content, by volume percent	Soil reaction: Free carbonates	pH	Plasticity constants by weight percent: Liquid limit	Plastic limit	Plasticity index	Bulk density grams per cc.	Soil moisture by weight, percent: Saturation	.06 Atmosphere tension
Airport	8	Salt Lake City Airport, Salt Lake	Grasses, greasewood, undisturbed	Terrace 1 percent 4,200	0-6	SL	57	27	16	1.15	0	N	8.4				1.56	22.1	17.1
					6-12	SCL	49	21	30	.86	0	Sl.	9.0	30	14	16	1.65	19.7	16.1
					12-18	CL	35	22	43	.70	0	St.	8.4				---	---	---
Billings	99	Ephriam, Sorensons Field, Sanpete	Alfalfa, cultivated previously, now moderately grazed	Terrace 1 percent 5,560	0-6	C	14	39	47	1.88	0	V	9.2				1.29	38.2	27.2
					6-12	C	24	27	49	1.65	0	V	9.4	33	19	14	1.53	26.2	22.4
					12-18	C	17	38	45	1.25	0	V	9.6				---	---	---
Bracken	110	St. George, Washington	Sagebrush-weeds, moderately grazed	Upland 2 percent 2,880	0-6	LS	79	15	6	.55	0	V	8.8				1.58	23.9	19.9
					6-12	LS	83	11	6	.55	0	V	8.8	Non-plastic			1.56	24.6	20.1
					12-18	SL	70	14	16	.46	0	V	8.8				---	---	---
Farmington	5	Farmington, Davis	Grass-like plants, grasses, moderately grazed	Bottom level 4,150	0-6	SiCL	19	46	35	15.00	0	St.	--				.78	90.3	81.9
					6-12	SiC	9	46	45	2.35	0	N	--	53	25	28	1.33	39.0	36.8
					12-18	SiCL	18	46	36	1.33	0	N	--				---	---	---
Gila	111	St. George, Washington	Grasses-tamarisk, lightly grazed	Terrace level 2,820	0-6	SL	64	21	15	1.05	0	St.	8.6				1.54	24.9	18.2
					6-12	SL	56	28	16	.70	0	St.	8.6	Non-plastic			1.47	28.8	21.0
					12-18	C	23	36	41	.55	0	St.	8.4				---	---	---
Gila	112	St. George, Washington	Grasses-pickle weed, moderately grazed	Terrace 1 percent 2,835	0-6	SL	78	8	14	2.35	0	St.	8.2				1.36	34.2	29.4
					6-12	SCL	49	19	32	.46	0	St.	8.2	Non-plastic			1.54	25.1	22.3
					12-18	LS	80	13	7	.38	0	St.	8.2				---	---	---
Ironton	6	Farmington, Davis	Grasses, lightly grazed	Terrace 1 percent 4,180	0-6	CL	37	36	27	6.04	0	St.	8.0				1.29	38.2	33.7
					6-12	CL	30	38	32	3.41	0	St.	8.2	36	18	18	1.49	28.6	27.0
					12-18	CL	27	43	30	.95	0	V	8.0				---	---	---
Kirkham	16	Spanish Fork, Utah	Clover-grasses, moderately grazed	Terrace level 4,600	0-6	C	23	28	49	3.96	0	St.	8.4				1.38	33.5	28.0
					6-12	C	16	34	50	1.45	0	V	8.8	35	18	17	1.57	24.6	23.1
					12-18	C	12	38	50	1.05	0	V	9.0				---	---	---
Kirkham	21	Spanish Fork, Utah	Grasslike plants-grasses, lightly grazed and hay	Terrace 1 percent 4,600	0-6	CL	33	30	37	3.77	0	St.	8.8				1.42	31.0	28.8
					6-12	CL	36	32	32	1.25	0	St.	8.8	26	16	10	1.56	25.6	24.4
					12-18	SCL	47	26	27	.86	0	St.	8.8				---	---	---
La Verkin	108	La Verkin, Washington	Peach and pear trees, cultivated orchard	Upland 2 percent 3,260	0-6	C	11	33	56	4.90	0	V	8.5				1.31	39.1	31.7
					6-12	C	24	29	47	1.25	0	V	8.5	33	16	17	1.45	30.2	27.0
					12-18	CL	44	23	33	.70	0	V	8.5				---	---	---
Mannassa (Like)	122	Milford, Beaver	Weeds, heavily grazed	Terrace level 4,970	0-6	SiL	24	57	19	1.65	0	V	9.0				1.48	30.3	24.2
					6-12	CL	30	39	31	.95	0	V	9.0	21	16	5	1.42	31.3	23.8
					12-18	C	16	34	50	.86	0	V	9.4				---	---	---
Mayfield (Like)	121	Cedar City Airport, Iron	Sagebrush-grasses, lightly grazed	Upland 3 percent 5,750	0-6	SL	56	27	17	2.23	0	V	8.6				1.48	28.5	22.5
					6-12	SL	63	24	13	.70	0	V	8.6	Non-plastic			1.42	31.8	23.6
					12-18	SL	60	26	14	.70	0	V	8.6				---	---	---
McBeth	18	Provo, Radio Kovo, Utah	Grains, cultivated previously, now in hay	Terrace 1 percent 4,480	0-6	CL	30	40	30	4.15	0	V	8.4				1.25	40.8	33.4
					6-12	CL	22	43	35	4.15	0	V	8.4	45	27	18	1.26	40.9	33.7
					12-18	CL	40	32	28	3.62	0	V	8.2				---	---	---
Mellor (Like)	123	Milford, Beaver	Alfalfa, cultivated previously, now in hay	Terrace level 4,955	0-6	CL	34	36	30	1.55	3	V	8.6				1.52	26.7	21.8
					6-12	CL	24	38	38	1.33	4	V	8.4	25	17	8	1.47	28.0	23.0
					12-18	C	17	29	54	1.25	5	V	9.0				---	---	---
Millard (Like)	125	Milford, Beaver	Rabbit brush-yellow brush, moderately grazed	Upland 3 percent 5,150	0-6	SL	64	22	14	.55	2	Sl.	8.4				1.73	19.8	14.8
					6-12	SL	60	27	13	.55	5	St.	8.4	Non-plastic			1.56	24.6	17.2
					12-18	SL	56	26	18	.55	5	V	8.6				---	---	---
Millville	23	Logan Experiment Station, Cache	Grasses-clover, moderately grazed	Bottom 1 percent 4,600	0-6	SiC	8	49	43	4.90	0	Sl.	8.4				1.34	34.8	32.3
					6-12	SiC	5	49	46	2.60	0	Sl.	8.0	40	24	16	1.40	31.6	30.4
					12-18	SiC	12	47	41	2.60	0	Sl.	8.2				---	---	---
Musinia (Like)	104	Circleville, Piute	Alfalfa, cultivated previously, now in hay	Terrace level 5,635	0-6	SCL	57	18	25	1.25	0	V	--				1.60	23.6	20.9
					6-12	SL	56	25	19	.55	0	V	--	24	19	5	1.64	23.9	22.0
					12-18	L	43	35	22	.38	0	V	--				---	---	---

(Continued)

Table 4. Utah soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent: Sand	Silt	Clay	Organic matter by weight percent	Stone content, by volume percent	Soil reaction: Free carbonates	pH	Plasticity constants by weight percent: Liquid limit	Plastic limit	Plasticity index	Bulk density grams per cc.	Soil moisture by weight, percent: Saturation	.06 Atmosphere tension
Musinia	115	Enterprise, Washington	Rabbitbrush-grasses-weeds, moderately grazed	Terrace level 5,400	0-6	L	42	45	13	1.88	0	Sl.	8.8				1.37	32.1	29.3
					6-12	SL	57	26	17	.62	0	St.	9.0		Non-plastic		1.50	27.7	25.7
					12-18	L	46	33	21	.62	0	St.	8.6				---	---	---
Palisade (Like)	102	Richfield, Sevier	Rabbitbrush-grasses, moderately grazed	Terrace 5 percent 5,315	0-6	SCL	59	12	29	1.77	0	St.	8.2				1.41	31.9	29.3
					6-12	SCL	55	15	30	1.15	0	V	8.2	34	17	17	1.42	31.0	27.9
					12-18	SL	69	12	19	.62	0	V	8.3				---	---	---
Redfield	100	Richfield, Sevier	Grasses, moderately grazed	Bottom 1 percent 5,295	0-6	C	5	34	61	3.13	0	V	8.4				1.26	42.1	38.1
					6-12	C	4	39	57	1.45	0	V	--	42	25	17	1.37	35.5	33.8
					12-18	C	14	35	51	1.15	0	V	--				---	---	---
Redfield	101	Richfield, Sevier	Clover-grasses, moderately grazed	Bottom level 5,285	0-6	C	14	24	62	5.80	0	St.	--				1.16	50.4	46.2
					6-12	C	2	35	63	1.45	0	V	--	58	24	34	1.42	33.2	33.0
					12-18	C	1	31	68	.95	0	V	--				---	---	---
Redfield (Like)	105	Circleville, Garfield	Grasses, lightly grazed	Terrace level 5,660	0-6	CL	25	39	36	4.15	5	V	--				1.23	44.7	40.7
					6-12	SC	56	7	37	1.77	5	V	--	37	18	19	1.53	26.6	25.9
					12-18	SCL	53	22	25	.70	10	V	--				---	---	---
Redfield	106	Zion N.P., Washington	Grasses-apple trees, cultivated orchard	Terrace 3 percent 3,950	0-6	CL	37	31	32	3.54	0	V	8.6				1.43	29.7	27.2
					6-12	CL	40	26	34	1.05	0	St.	8.4	35	16	19	1.66	20.2	19.4
					12-18	CL	35	27	38	.70	0	St.	8.4				---	---	---
Redfield	107	Zion N.P., Washington	Alfalfa-grasses, moderately grazed	Terrace level 3,800	0-6	CL	35	34	31	2.60	0	V	8.4				1.55	25.5	22.4
					6-12	CL	42	30	28	1.88	0	V	8.2	30	15	15	1.57	23.5	19.7
					12-18	CL	45	20	35	1.45	0	Sl.	8.2				---	---	---
Redfield	109	La Verkin, Washington	Clover-grasses, moderately grazed	Upland 3 percent 3,240	0-6	CL	38	27	35	3.00	0	St.	8.2				1.54	29.5	27.6
					6-12	CL	31	31	38	.95	0	St.	8.2	29	17	12	1.70	22.2	21.7
					12-18	CL	43	27	30	.70	0	St.	8.2				---	---	---
Red Rock	20	Provo Radio KOVO, Utah	Grasses, moderately grazed	Terrace 1 percent 4,500	0-6	L	48	29	23	2.23	0	St.	9.4				1.65	20.5	18.9
					6-12	SCL	52	25	23	1.98	0	St.	8.8	28	21	7	1.53	23.4	20.3
					12-18	SL	59	22	19	1.45	0	St.	8.2				---	---	---
Salt Air	9	Salt Lake City Airport, Salt Lake	Bare-pickle weeds, undisturbed	Bottom level 4,215	0-6	SiC	8	41	51	1.33	0	V	--				1.27	38.8	32.9
					6-12	SiC	7	41	52	1.15	0	V	--	36	17	19	1.60	24.2	22.9
					12-18	SiC	6	42	52	.70	0	V	--				---	---	---
Salt Air	141	Wendover, Tooele	Bare-pickle weeds, undisturbed	Bottom level 4,240	0-6	C	10	15	75	1.88	0	St.	9.0				1.42	35.4	34.9
					6-12	C	3	23	74	1.25	0	St.	9.0	30	19	11	1.53	29.4	28.1
					12-18	C	32	14	54	1.05	0	St.	9.4				---	---	---
Salt Air	142	Wendover, Tooele	Bare-pickle weeds, undisturbed	Bottom level 4,240	0-6	C	1	23	76	1.33	0	St.	9.0				1.41	33.1	31.6
					6-12	C	8	30	62	1.33	0	St.	8.6	34	21	13	1.54	28.8	25.6
					12-18	C	3	28	69	1.05	0	St.	8.6				---	---	---
Salt Air	143	Knolls, Tooele	Bare, undisturbed	Bottom level 4,240	0-6	C	10	36	54	1.98	0	St.	8.8				1.34	36.4	36.0
					6-12	SiC	3	44	53	1.05	0	Sl.	8.3	25	21	4	1.34	37.6	37.1
					12-18	SiC	4	47	49	1.77	0	Sl.	8.3				---	---	---
Salt Air	144	Knolls, Tooele	Bare-pickle weeds, undisturbed	Bottom level 4,240	0-6	SiCL	3	67	30	1.05	0	V	--				1.33	37.9	37.4
					6-12	SiC	3	41	56	1.33	0	V	--	38	20	18	1.30	38.6	38.3
					12-18	SiC	4	41	55	1.45	0	V	--				---	---	---
Salt Lake	24	Logan Experiment Station, Cache	Grasses, hay	Bottom level 4,600	0-6	SiC	12	43	45	6.52	0	V	8.4				1.15	48.0	41.0
					6-12	C	11	38	51	4.90	0	V	8.2	52	35	17	1.08	55.1	52.2
					12-18	C	11	40	49	4.70	0	V	8.2				---	---	---
St. George	113	St. George, Washington	Weeds, heavily grazed	Upland 2 percent 2,880	0-6	LS	80	15	5	.55	0	Sl.	8.4				1.60	23.3	15.1
					6-12	LS	83	11	6	.55	0	Sl.	8.6		Non-plastic		1.62	22.0	13.2
					12-18	SL	48	46	6	.32	0	Sl.	8.6				---	---	---
Tabiona	116	Enterprise, Washington	Alfalfa-weeds, moderately grazed	Terrace level 5,400	0-6	L	43	34	23	3.00	0	V	8.4				1.46	29.2	26.5
					6-12	L	41	35	24	2.35	0	V	8.8	27	17	10	1.52	26.4	23.2
					12-18	CL	30	42	28	1.65	0	V	8.8				---	---	---

(Continued)

Table 4. Utah soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	.06 Atmosphere tension
Tabiona	117	Enterprise, Washington	Sagebrush-rabbit brush, lightly grazed	Terrace 2 percent 5,420	0-6	SL	70	23	7	1.65	3	V	--				1.52	25.1	21.9
					6-12	SL	66	23	11	.95	5	V	--	Non-plastic			1.55	24.6	21.0
					12-18	L	49	29	22	1.15	15	V	--				---	---	---
Taylorsville	12	A.S.R. Research Lab., Salt Lake	Grasses, undisturbed	Terrace level 4,210	0-6	SiC	18	42	40	4.80	0	St.	8.0				1.44	29.1	25.0
					6-12	C	19	39	42	2.35	0	V	8.2	31	18	13	1.48	25.5	21.3
					12-18	C	22	33	45	1.45	0	V	8.2				---	---	---
Taylorsville	13	A.S.R. Research Lab., Salt Lake	Grasses-weeds, undisturbed	Terrace level 4,210	0-6	CL	21	39	40	4.34	5	V	8.2				1.22	40.6	30.1
					6-12	CL	25	38	37	1.88	5	V	8.8	30	18	12	1.46	27.5	23.4
					12-18	CL	28	32	40	1.65	5	V	8.6				---	---	---
Taylorsville	14	Magna, Salt Lake	Grasses, undisturbed	Terrace level 4,200	0-6	SiC	16	43	41	3.96	0	V	8.6				1.36	33.2	27.9
					6-12	SiC	10	42	48	1.88	0	V	9.2	33	18	15	1.46	28.0	25.6
					12-18	C	5	37	58	1.05	0	V	8.6				---	---	---
Terminal	10	Salt Lake City Airport, Salt Lake	Grasses, lightly grazed	Terrace 1 percent 4,190	0-6	SiC	10	40	50	2.60	0	V	8.4				1.37	33.4	25.2
					6-12	C	8	39	53	.78	0	V	8.4	41	16	25	1.50	30.4	27.4
					12-18	SiC	6	41	53	.62	0	V	9.4				---	---	---
Terminal	15	Magna, Salt Lake	Grasses-weeds, lightly grazed	Terrace 2 percent 4,200	0-6	CL	28	37	35	3.62	0	V	8.8				1.38	32.4	28.1
					6-12	CL	34	34	32	1.45	0	V	8.4	26	17	9	1.44	28.9	24.5
					12-18	CL	40	29	31	1.05	0	V	8.4				---	---	---
Timpanogas	7	Farmington, Davis	Weeds, moderately grazed	Terrace 4 percent 4,400	0-6	L	38	43	19	2.87	0	Sl.	8.2				1.37	30.6	25.9
					6-12	L	37	41	22	2.87	0	Sl.	8.2	25	18	7	1.44	28.5	23.0
					12-18	L	32	44	24	2.08	0	N	8.2				---	---	---
Tobler	114	St. George, Washington	Sagebrush-grasses, lightly grazed	Upland 3 percent 2,860	0-6	S	91	5	4	.32	0	N	8.2				1.60	21.8	8.8
					6-12	LS	88	5	7	.18	0	N	8.2	Non-plastic			1.69	20.5	11.6
					12-18	LS	87	9	4	.18	0	N	8.2				---	---	---
Trenton	22	Logan Experiment Station, Cache	Grasses-grasslike plants, moderately grazed	Bottom 1 percent 4,600	0-6	SiC	5	52	43	6.04	0	St.	8.2				.97	63.0	53.6
					6-12	SiC	4	43	53	3.77	0	St.	8.6	49	27	22	1.26	42.2	39.8
					12-18	C	4	38	58	1.88	0	St.	8.4				---	---	---
Welby	11	A.S.R. Research Lab., Salt Lake	Grasses, hay	Terrace 2 percent 4,200	0-6	SL	53	31	16	3.00	0	Sl.	8.2				1.54	26.6	23.1
					6-12	SL	57	29	14	1.25	0	St.	8.2	22	18	4	1.58	24.4	19.8
					12-18	SL	57	26	17	.70	0	St.	9.0				---	---	---
Welby	17	Spanish Fork, Utah	Grasses, cultivated previously, now lightly grazed	Terrace 1 percent 4,680	0-6	CL	28	39	33	3.96	0	V	8.2				1.20	41.4	29.8
					6-12	L	34	44	22	2.60	0	V	8.2	25	17	8	1.42	29.6	22.8
					12-18	L	34	39	27	2.23	0	V	8.6				---	---	---
Welby	19	Provo Radio KOVO, Utah	Grasses, moderately grazed	Terrace 1 percent 4,520	0-6	CL	30	34	36	5.92	30	V	8.8				1.18	44.6	40.3
					6-12	CL	32	36	32	5.68	35	V	8.4	48	30	18	1.17	45.0	40.8
					12-18	CL	32	31	37	4.90	40	St.	8.0				---	---	---
SERIES UNIDENTIFIED:																			
Desert	97	Ephriam, Sorensons Field, Sanpete	Sagebrush-grasses, moderately grazed	Upland 3 percent 5,580	0-6	CL	22	41	37	2.35	5	V	9.4				1.39	32.0	25.6
					6-12	CL	24	37	39	1.45	5	V	9.4	31	18	13	1.48	27.4	22.0
					12-18	C	23	36	41	1.25	5	V	9.4				---	---	---
Desert	118	Beryl-Enterprise Junction, Iron	Rabbit brush, lightly grazed	Upland 2 percent 5,400	0-6	C	35	19	46	3.62	0	V	--				1.04	52.8	41.4
					6-12	SiC	14	41	45	2.35	0	V	--	42	28	14	1.08	52.4	43.7
					12-18	SiC	10	42	48	1.65	0	V	--				---	---	---
Desert	119	Beryl-Enterprise Junction, Iron	Sagebrush-saltbush, lightly grazed	Upland 1 percent 5,370	0-6	C	10	36	54	2.08	0	Sl.	8.6				1.38	32.8	27.1
					6-12	C	15	36	49	1.65	0	Sl.	8.6	34	22	12	1.18	45.8	39.2
					12-18	SCL	46	23	31	1.25	0	Sl.	8.6				---	---	---
Desert	120	Cedar City Airport, Iron	Shadscale-sagebrush, lightly grazed	Upland level 5,600	0-6	C	5	28	67	3.13	0	V	9.0				1.41	31.2	24.8
					6-12	C	12	28	60	1.65	0	V	9.0	34	18	16	1.69	21.4	19.9
					12-18	CL	25	38	37	1.55	0	V	8.8				---	---	---
Desert	126	Desert Experiment Range, Millard	Yellow brush-grasses, lightly grazed	Upland 1 percent 6,000	0-6	SL	77	15	8	.32	2	N	8.6				1.46	28.5	11.1
					6-12	SL	76	11	13	.38	2	Sl.	8.6	Non-plastic			1.52	25.1	12.0
					12-18	SL	67	23	10	.32	2	Sl.	8.6				---	---	---

(Continued)

Table 4. Utah soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	.06 Atmosphere tension
SERIES UNIDENTIFIED (Continued):																			
Desert	127	Desert Experiment Range, Millard	Shadscale-winter fat-saltbush, lightly grazed	Upland 2 percent 6,900	0-6	SL	70	19	11	0.55	5	V	8.4		Non-plastic		1.40	29.4	17.2
					6-12	SL	68	21	11	.55	10	V	8.4				1.44	28.6	21.2
					12-18	SL	60	22	18	.38	30	V	9.0				---	---	---
Desert	129	Garrison, Millard	Shadscale-weeds, lightly grazed	Terrace 1 percent 5,300	0-6	L	42	34	24	1.33	0	V	8.4				1.34	35.4	26.0
					6-12	L	40	34	26	1.33	0	V	8.4	21	17	4	1.36	34.0	23.0
					12-18	CL	20	46	34	.78	0	V	8.6				---	---	---
Desert	130	Garrison, Millard	Yellow brush, greasewood, lightly grazed	Upland 2 percent 5,285	0-6	SL	60	23	17	1.15	5	V	8.8		Non-plastic		1.62	22.1	15.4
					6-12	L	34	46	20	.95	10	V	9.2				1.59	23.9	16.9
					12-18	CL	34	34	32	.95	30	V	9.2				---	---	---
Desert	131	Garrison, Millard	Shadscale, greasewood, lightly grazed	Upland 1 percent 5,230	0-6	SL	53	29	18	1.05	5	St.	8.8		Non-plastic		1.52	26.6	19.6
					6-12	SL	54	27	19	1.05	10	St.	8.8				1.56	25.8	19.6
					12-18	L	49	34	17	.86	25	St.	8.8				---	---	---
Desert	145	Knolls, Tooele	Shadscale-weeds, undisturbed	Terrace 1 percent 4,240	0-6	CL	28	44	28	2.08	0	V	9.2				1.51	25.2	18.0
					6-12	CL	29	37	34	1.77	0	V	8.8	31	15	16	1.50	26.2	19.2
					12-18	C	28	28	44	1.33	0	V	9.2				---	---	---
Desert Playa	128	Desert Experiment Range, Millard	Bare, undisturbed	Upland level 5,990	0-6	C	4	27	69	2.35	0	V	8.2				1.24	41.5	33.7
					6-12	C	8	26	66	1.45	0	V	8.2	34	24	10	1.25	43.4	33.0
					12-18	C	1	35	64	1.15	0	V	8.4				---	---	---
Mountain Valley	98	Ephriam, Sorensons Field, Sanpete	Grasses, grass-like plants, lightly grazed	Bottom level 5,500	0-6	C	7	36	57	6.52	0	V	9.6				1.21	45.4	39.7
					6-12	C	6	35	59	2.75	0	V	9.2	50	23	27	1.38	34.4	33.6
					12-18	C	2	33	65	1.45	0	V	9.2				---	---	---
Mountain Valley	103	Circleville, Piute	Grasses, grass-like plants, lightly grazed	Bottom level 5,650	0-6	C	14	35	51	2.87	0	V	--				1.04	54.3	49.7
					6-12	C	24	36	40	2.35	0	V	--	54	29	25	1.16	49.7	47.4
					12-18	C	19	31	50	2.35	0	V	--				---	---	---
Mountain Valley Soil	124	Milford, Beaver	Grasses, grass-like plants, lightly grazed	Terrace level 4,966	0-6	C	10	24	66	5.24	0	St.	9.4				1.23	43.8	41.8
					6-12	C	8	36	56	3.13	0	V	8.8	50	24	26	1.40	34.6	33.4
					12-18	SiCL	7	54	39	1.88	0	V	9.0				---	---	---
Mountain Soil	1	Farmington, Buckman Flat, Davis	Aspen, undisturbed	Upland 5 percent 7,100	0-6	CL	25	42	33	5.80	5	N	6.8				.99	61.9	40.2
					6-12	CL	33	40	27	5.24	5	N	6.8	41	28	13	1.18	45.2	33.1
					12-18	CL	38	31	31	5.46	5	N	6.6				---	---	---
Mountain Soil	2	Farmington Parrish Plots, Davis	Grasses-weeds, undisturbed	Upland 3 percent 8,400	0-6	SL	57	25	18	5.56	10	N	6.8				1.20	43.8	28.4
					6-12	SL	68	18	14	2.47	20	N	7.0		Non-plastic		1.30	38.2	24.7
					12-18	SL	65	22	13	1.88	25	N	7.0				---	---	---
Mountain Soil	3	Farmington Rice, Davis	Grasses-weeds-aspen, undisturbed	Terrace 3 percent 6,950	0-6	CL	25	43	32	9.00	5	N	6.8				1.23	42.6	29.5
					6-12	CL	32	38	30	5.68	20	N	6.8	39	25	14	1.26	40.6	32.5
					12-18	L	36	39	25	4.05	30	N	6.8				---	---	---
Mountain Soil	4	Farmington Ranger Station, Davis	Grasses, undisturbed	Upland 1 percent 7,600	0-6	L	34	40	26	3.86	10	N	6.4				1.43	28.1	24.6
					6-12	L	32	41	27	3.77	30	N	6.8	31	19	12	1.48	27.6	25.3
					12-18	CL	27	43	30	3.13	40	N	7.2				---	---	---
Mountain Soil	94	Ephriam Alpine Meadows, Sanpete	Grasses, undisturbed	Upland 2 percent 9,860	0-6	C	10	34	56	4.52	1	N	8.2				1.22	44.7	40.0
					6-12	C	11	35	54	4.05	5	N	8.8	56	26	30	1.31	39.7	38.4
					12-18	C	5	32	63	2.60	15	N	8.0				---	---	---
Mountain Soil	95	Ephriam HDQS. G.B.R.C., Sanpete	Aspen, undisturbed	Upland 3 percent 8,500	0-6	C	15	36	49	5.92	0	Sl.	8.2				1.01	58.1	50.2
					6-12	C	10	35	55	5.80	0	Sl.	8.2	59	32	27	1.22	42.6	41.2
					12-18	C	8	35	57	5.34	0	Sl.	8.0				---	---	---
Mountain Soil	96	Ephriam Oaks, Sanpete	Scrub oak-grasses, undisturbed	Upland 7 percent 7,655	0-6	C	22	34	44	3.62	1	N	8.8				1.28	40.6	33.3
					6-12	C	23	34	43	3.62	2	N	8.6	49	23	26	1.41	31.8	30.9
					12-18	C	20	30	50	2.35	4	Sl.	8.4				---	---	---